

**UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF OHIO
WESTERN DIVISION**

United States of America, et al.,)	
)	
Plaintiffs,)	
)	
v.)	Case No. 1-02-107
)	
)	
The Board of County Commissioners)	
of Hamilton County, Ohio and The City of)	Judge S. Arthur Spiegel
Cincinnati,)	
)	Magistrate Judge Timothy S. Hogan
)	
)	
Defendants.)	
_____)	

**FOURTH DECLARATION OF
MICHAEL KAVANAUGH, Ph.D.**

I Michael Kavanaugh, Ph.D., being of full age, hereby declare and state as follows:

1. I am a research economist residing in Batavia, Ohio. I regularly consult with the United States Department of Justice, the U.S. Environmental Protection Agency, citizen groups, and others on economic issues. My work often involves the economic issues that arise in the enforcement of federal environmental laws.
2. This is my fourth declaration in this case. The first addressed the USEPA's civil penalty policy; the second addressed the affordability of overflow controls to the ratepayers of Hamilton County. The third addressed problems that are likely to arise in administering the proposed consent decrees in this civil action.
3. This declaration addresses issues raised in the declaration of Jeffrey W. Rexhausen. His declaration criticized the analysis in my second declaration on the affordability of overflow controls to MSD ratepayers. Specifically, Mr. Rexhausen raises concerns, *inter alia*, about my estimates of:
 - The number of households;
 - The residential share of service revenues;
 - The level and growth of median household income and,
 - The level and cost of debt.

I address these concerns below.

4. To place the following discussion in context,

- a) My second declaration calculated the rates needed to pay for overflow controls and compared them to median household income. EPA recommends this procedure in its CSO guidance. The Sierra Club is the only party to place this type of analysis before the Court.
- b) In conducting the analysis I use economic, demographic and financial data and make technical economic and financial assumptions. Mr. Rexhausen has concerns about the data and the assumptions.
- c) In conducting the analysis I use overflow control cost estimates prepared by MSD's consultant, BBS. BBS's estimate for a minimum program (10-yr./24hr storm) was \$1.2 billion; its estimate for a maximum program (100-year storm) was \$3.6 billion.
- d) My analysis shows that either the minimum or maximum program can be paid for with rate burdens (rates expressed as a share of median household income) that are below the financial distress threshold set forth in the EPA's financial capability guidance.

5. I describe my estimate of the number of households in the MSD service area in my second declaration at ¶14 and n.10. For convenience I repeat the description:

There are at least 300,000 MSD residential customers and their number is constant through the period 2002-2024 even though the county added 7900 households between 1990 and 2000. (Kavanaugh, 2nd Dec. ¶14.b)

The 2000 U.S. Census reports 346,000 households in Hamilton County. MSD serves most but not the entire county. Subtracting out the households in Terrace Park (759), Glendale (904), and Harrison City (2682) leaves 342,000. There is an unincorporated area of western Hamilton County not served by MSD. I approximated it by Whitewater Township, which has 2038 households. This leaves 340,000 households. To be conservative I reduce this estimate by 10% and round down to 300,000. (Kavanaugh, 2nd Dec. note 10)

Mr. Rexhausen asserts in his declaration at ¶5, that I overestimate the number of households because I discount only for households outside of MSD's service area. This is not so. I exclude Glendale, Terrace Park and Whitewater Township. Moreover I build in a margin for error when I subtract an additional 10%.¹

6. The residential share divides responsibility for MSD revenues between the residential and the industrial and commercial sectors. I estimate the residential share using data from the Official Statements available to me when I performed the analysis.² I obtained a residential share of 64% and increased it to 67% out of caution.

¹ MSD is constructing a line that will connect the Village of Terrace Park to MSD. Long before the proposed consent decrees are concluded, the approximately 750 households in the Village of Terrace Park will be served by MSD.

² The 2000 Official Statement reported 202,317 residential accounts (p.34), an average residential quarterly bill of \$71.78 (p.38) and operating revenues of \$90 million (p.40). A residential account differs from a household. A residential account may be for structures that contain many households. Accordingly the

- 7 This declaration provides an opportunity to use information that became available subsequent to my second declaration. Using the 2001 Official Statement and the method described in note 2, I obtain a share of 66%.³ Using the 2003 Official Statement-- not yet issued when I performed my original analysis-- and using the same method I obtained a residential share of 66%.⁴
8. The data used to represent MSD operations when offering bonds to the public does not support Mr. Rexhausen's assertions that the residential share is increasing beyond what I used. Assertions that the industrial and commercial sector can avoid paying rate increases through conservation efforts that exceeds residential conservation efforts are fantastic. If this were true MSD could announce a rate increase and industry would reduce water use.⁵ This would effectively expand capacity. There are no expansions of capacity to be obtained simply by posting a rate increase.⁶
9. My estimate of the level of median household income is described in Kavanaugh, 2nd Dec. n.13 (relevant sections repeated below)⁷

MSD serves most but not the entire county. The U.S. Census reports median household income for Hamilton County in 1999 at \$40,964. It also reports the number of households in \$5000 ranges (e.g., the number between 35,000 and 39,999). Subtracting out Terrace Park, Glendale, Harrison City and Whitewater Township and examining the remaining households by \$5000 income ranges reveals that 49% make less than 39,999 and 54% earn less than 44,999. Mindful of this data, I place median household income at \$40,000. (Kavanaugh, 2nd Dec. note 13)

Mr. Rexhausen asserts in his declaration at ¶7, that I. "wrongly include more affluent areas within Hamilton County that are unsewered and do not receive (or pay for) MSD Service." My declaration states just the opposite. I subtract out the areas without sewers and the affluent villages that do not receive or pay for MSD service.

10. My estimate of the rate of change of median household income is described in Kavanaugh, 2nd Dec. ¶14 and must be read in connection with the rate of change of prices. No one expects prices and income to remain constant over the next two

number of households exceeds the number of accounts. I multiplied the quarterly bill by four and obtained \$287. I multiplied this by 202,317 and obtained \$58 million. I expressed this as a ratio to total system revenue 58/90 and obtained 64%. I increased it to 67% and used it as the residential share.

³ The 2001 Official Statement reports residential accounts of 204251, annual bill of 307.28 and Service Revenues of \$94.4 million. The residential payment is \$62.7 million and the share is 66%.

⁴ The 2003 Official Statement reports residential accounts at 202,597, annual charges of \$349 and revenues of \$108 million. The residential payment is \$71 million and the share is 66%.

⁵ Industry in this context includes office buildings, hospitals, schools, retail establishments as well as the more commonly thought of industries in the manufacturing sector.

⁶ Often these assertions are based on the behavior of industry to surcharges not base charges. Citing a study that found **surcharges** to be revenue neutral it is asserted that the results can be applied to base charges. It is then asserted that any increase in commercial/industrial rates will be offset by (conservation) efforts that leave revenue from industry unchanged. The error in logic is: the behavior is different between base and surcharges because there are more substitution possibilities that allow industry to avoid a surcharge than there are to avoid a base rate increase.

⁷ My estimate of \$40,000 is slightly higher than that suggested by Mr. Rexhausen of \$39,348.

decades. No one knows what these price and income changes will be.⁸ A principle of economics is: when prices double and income doubles there has not been a real economic change. This is the assumption I used, that is, I assumed no real economic change. I increase both prices and income at the same 3.5% rate. I increase the existing operating costs of the system at 3.5% per year, I increase the operating cost of the overflow controls by 3.5% per year and I increase income at 3.5% per year. In brief, I assume, *argumendo*, there is no real economic growth in the MSD service area.

11. Mr. Rexhausen misinterprets my estimate of the rate of growth median household income. I assumed exactly what he suggests is a reasonable assumption about future growth, namely, real income stagnation. The difference between our opinions is that I assume no real economic growth to make an argument. Mr. Rexhausen (and Professor Vredevelde) are pessimistic about the region's future and see thirty years of stagnation and decline (Rexhausen ¶7, last sentence).
12. As to Mr. Rexhausen's comments about the county's economy, in June 2003, Hamilton County borrowed over \$215 million for sewer system improvements and to refund some existing debt. In the June 25, 2003 Official Statement that accompanied the offer to sell bonds the county's economy is described at p.46-48 as⁹:
 - A transportation and industrial center;
 - Possessing a diverse economic base (that) continues to be a source of stability for the area, protecting it from severe peaks and valleys in the business cycle.
 - The Metropolitan area is a growing center for international business.
 - The vitality of the metropolitan area begins at the riverfront in downtown Cincinnati.
 - Cincinnati's Central Business District (the CBD) is a full-scale regional office center. In the past fifteen years the construction of new office buildings has been a major catalyst for new job growth and tax revenue generation.

Further, Hamilton County and its bond counsel when borrowing funds from the public describe its economy in terms like "growing center", "vitality" and "job growth". In contrast, Hamilton County and its consultants when discussing spending the public's funds for sewer overflow controls describe the county's economy as one of "declining economic position" and "stagnation". An objective observer would attach more weight to borrowing documents where representations are made under criminal penalty.

13. In his declaration at ¶8 Mr. Rexhausen complains that I use old data. I used data found in the November 2, 2001 Official Statement and MSD's 2002 financial reports. I did not use the June 2003 Official Statement because it had not been issued when I performed my analysis.

⁸ I consulted a well-respected source for regional estimates, Nestor Terleckyj and J.F. Sencindryer. They forecast real growth of 1.5% for this region but I did not use their estimate. To be cautious, I assumed no real growth.

⁹ Nearly identical statements are made in the 2000 and 2001 Official Statements.

14. Mr. Rexhausen at ¶8 reports a programming error in my work papers. I examined the computer code and corrected it. The error does not make a material change in any of my conclusions. My conclusions are in ¶6 and ¶7 of my second declaration. I repeat them below. The number in bold and bracketed shows the effect of the programming error.

First, my analysis finds that the MSD ratepayers have the ability to pay for system improvements (SSO, CSO, WIB and treatment plant upgrades) designed from an engineering standpoint to deal with the 10-year, 24-hour storm. This is what MSD has called the Minimum or Standard Program Rates adjusted for depreciation will increase an average of 5.4 % per year for the next 20 years. These rates, when stated as a share of median household income never exceed .8% [**.9%**] of median household income. This is well below USEPA's threshold of financial distress. Over this period, MSD ratepayers may have to pay for other water quality programs unrelated to wastewater collection and treatment system improvements. I considered two other programs. As discussed in the Wilber declaration, a fully phased-in stormwater program may add \$50 annually. An asset management may add \$100 annually. When the costs of these programs are considered concurrently with collection and treatment system improvements, rates never exceed 1.2% of median income. MSD ratepayers, in short, clearly have the ability to pay for the improvements needed for complying with the CWA. (Kavanaugh, 2nd Dec. ¶6)

Determining the ability to pay for a program designed to control pollution from a 100-year storm is made difficult because MSD and its consultants have created controversy and confusion as to the costs associated with this program. When viewed apart from other water quality programs, however, spending for the 100-year program raises depreciation-adjusted rates to 1.6% [**1.7%**] of median income, an amount that is still below the USEPA's financial distress threshold. Finally, the MSD has framed this discussion in terms of minimum and maximum programs; it is very likely that an intermediate and/or an accelerated program could be fashioned that would achieve water quality goals more quickly and still maintain rates below the USEPA threshold. (Kavanaugh, 2nd Dec. ¶7)

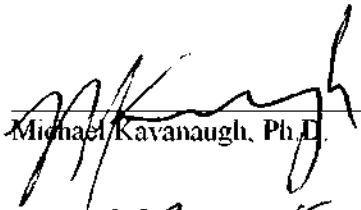
15. In his declaration at ¶9 Mr. Rexhausen observes that I omitted the costs of debt service coverage. I did omit this cost because it is a form of savings and it is the procedure recommended by EPA guidance. See *Combined Sewer Overflows: Guidance for Financial Capability Assessment and Schedule Development*, p. 13.
16. In his declaration at ¶10 Mr. Rexhausen makes a statement directed at the data used to estimate costs of overflow controls. The statement I made is:

Mr. Wilber makes rate estimates using cost estimates prepared by MSD's consultant, BBS Corporation, MSD budget documents, his own opinions about the cost of other water quality programs, and consultations with Professor Vredevelde (and others) at the Economics Center for Education and Research at the University of Cincinnati. Mr. Wilber uses a budget document that includes depreciation. In so doing, he departs from USEPA guidance for preparing an assessment of ability to pay. Mr. Wilber includes both depreciation and asset management funding in his rate estimates and in so doing counts the same concept twice. Dr. Vredevelde uses, *inter alia*, Mr. Wilber's rate estimates to make statements about economic impact and financial capability, thereby carrying over Mr. Wilber's errors into his report. (Kavanaugh, 2nd Dec. ¶9 n 7.)

Notwithstanding Mr. Rexhausen's comments, the above statement was and is accurate.

17. I have read and considered Mr. Rexhausen's declaration concerning my second declaration. There is no reason to modify the conclusions of my second declaration about the affordability of overflow controls to MSD ratepayers. My analysis shows

that either the minimum or maximum program can be paid for with rate burdens (rates expressed as a share of median household income) that are below the financial distress threshold set forth in the EPA's financial capability guidance.



Michael J. Kavanaugh, Ph.D.

Date: May 19, 2007